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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/869,410	08/31/2001	Pieter Lykle Buwalda	294-103PCT/U	2611

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EXAMINER

LEWIS, PATRICK T

ART UNIT

PAPER NUMBER

1623

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14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/869,410

Applicant(s)

BUWALDA ET AL.

Examiner

Patrick T. Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2002 and 20 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Objections/Rejections Set Forth in the Office Action dated September 26, 2002

1. Claims 13-15 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Seppala et al. WO 97/03120 (Seppala).
2. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala et al. WO 97/03120 (Seppala) in view of Bathelaan et al WO 94/24169 (Bathelaan).

Applicant's Response dated October 16, 2002

3. In the amendment dated October 16, 2002 claims 13-20 were canceled. Claims 21-28 were added. An action on the merits of claims 21-28 is contained herein.
4. In the amendment dated October 16, 2002, applicant presented arguments directed to the rejections of claims 13-15 and 18-19 under 35 U.S.C. 102(b) and claims 13-20 under 35 U.S.C. 103(a).
5. Applicant's arguments with respect to claims 13-15 and 18-19 under 35 U.S.C. 102(b) and claims 13-20 under 35 U.S.C. 103(a) have been considered but are moot in view of applicant's cancellation of said claims. Newly added claims 21-28 are not seem to be patentable over the art of record and will be addressed in new rejections herein below.

Response to Arguments

6. Applicant's arguments filed October 16, 2002 have been fully considered but they are not persuasive. Applicant asserts that Seppala et al. is deficient since natural root or tuber starches contain at most 80% of amylopectin. A reference is deemed to be valid for what it teaches. Seppala teaches hydrophobic starches, which may be derived from root, or tuber starches with an amylopectin content of 0 to 100% (page 15, lines 18-20). Thus, claims of methods for preparing starches derived from root or tuber starches with an amylopectin content of 0 to 100% are anticipated by the art of record.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has failed to particularly point out the identity of the modifications to the "plant that has been genetically modified" which distinctly set forth the structural, biological, or chemical modifications effectuating said genetic modifications. In the absence of distinct modifications, the term "genetically modified" is indefinite in all occurrences.

Claim 21 fails to end in a period. It is unclear whether the claim is complete or if there are additional limitations intended after the semicolon. This omission renders the claim and all depending claims indefinite.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
11. Claims 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala et al. WO 97/03120 (Seppala) in view of Hovenkamp-Hermelink et al. Theor. Appl. Genetics (1987), vol 75, pages 217-221 (Hovenkamp) and Bathelaan et al WO 94/24169 (Bathelaan).

Claims 21-26 are drawn to a process for preparing a hydrophobic starch comprising attaching a hydrophobic substituent to the starch by esterification, etherification, or amidation wherein the starch is a root or tuber starch, or derivative thereof wherein said starch is from a plant that has been genetically modified to have reduced amylose content, comprising at least 95% amylopectin based on the dry substance of the starch and wherein the reaction utilizes a hydrophobic reagent comprising an alkyl having 7-24 carbon atoms.

Seppala teaches hydrophobic starches which may be derived from potato, wheat, maize, tapioca, rice and similar root or cereal plants (page 15, lines 18-26). The amylopectin content of the starch may be from 0 to 100% (page 15, lines 18-20). The starch is prepared by oxidation, hydrolysis, cross-linking, cationization, etherification, or esterification. The starches are preferably obtained from the esterification or etherification of the natural starch with one or several C2-24-carboxylic acids (page 15, lines 28-31; page 16, lines 1-4). Esterification is also accomplished using acetic anhydride in the presence of a catalyst (page 16, lines 15-22).

Seppala and the instantly claimed invention differ in that Seppala does not teach (1) starches from a plant that has been genetically modified, (2) a process wherein the

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starch is hydrophobized via amidation, and (3) attaching the hydrophobic group in the presence of a surfactant. However, these deficiencies are taught by Hovenkamp and Bathelaan.

Hovenkamp teaches the isolation of amylose-free starch from mutant potatoes [genetically modified] (page 220, first paragraph). The methodological steps claimed by applicant for preparing a hydrophobic starch are known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the starch taught by Hovenkamp in the process taught by Seppala. A prima facie case of obviousness may be made when chemical compounds [starches] have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). In the instant case, the starches taught by both Seppala and Hovenkamp have up to 100% amylopectin content.

Bathelaan teaches a method of making amid-modified carboxyl-containing polysaccharides via amidation utilizing long chain primary alkyl amines (pages 12-14, Examples 1-3). Bathelaan also teaches the use of butyl glycol ether [surfactant] to aid in the hydrophobization (page 11, lines 4-7). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the hydrophobicity of starch via amidation and to employ surfactants to promote the reaction since Bathelaan teaches such a process for polysaccharides.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Seppala, Hovenkamp, and Bathelaan and arrive at the instantly claimed invention. One would have been motivated to do so to produce dispersing agents useful for the coatings industry.

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala et al. WO 97/03120 (Seppala) in view of Hovenkamp-Hermelink et al. Theor. Appl. Genetics (1987), vol 75, pages 217-221 (Hovenkamp).

Claim 27 is drawn to a hydrophobized amylopectin starch product obtained from a process comprising attaching a hydrophobic substituent to the starch by esterification, etherification, or amidation wherein the starch is a root or tuber starch, or derivative thereof wherein said starch is from a plant that has been genetically modified to have reduced amylose content, comprising at least 95% amylopectin based on the dry substance of the starch and wherein the reaction utilizes a hydrophobic reagent comprising an alkyl having 7-24 carbon atoms.

Seppala teaches hydrophobic starches which may be derived from potato, wheat, maize, tapioca, rice and similar root or cereal plants (page 15, lines 18-26). The amylopectin content of the starch may be from 0 to 100% (page 15, lines 18-20). The starch is prepared by oxidation, hydrolysatation, cross-linking, cationization, etherification, or esterification. The starches are preferably obtained from the esterification or etherification of the natural starch with one or several C2-24-carboxylic acids (page 15, lines 28-31; page 16, lines 1-4). Esterification is also accomplished using acetic anhydride in the presence of a catalyst (page 16, lines 15-22).

Seppala and the instantly claimed invention differ in that Seppala does not teach starches from a plant that has been genetically modified. However, Hovenkamp teaches these deficiencies.

Hovenkamp teaches the isolation of amylose-free starch from mutant potatoes [genetically modified] (page 220, first paragraph). The methodological steps claimed by applicant for preparing a hydrophobic starch are known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the starch taught by Hovenkamp in the process taught by Seppala to obtain the instantly claimed hydrophobic starch. A prima facie case of obviousness may be made when chemical compounds [starches] have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). In the instant case, the starches taught by both Seppala and Hovenkamp have up to 100% amylopectin content.

13. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seppala et al. WO 97/03120 (Seppala) in view of Hovenkamp-Hermelink et al. Theor. Appl. Genetics (1987), vol 75, pages 217-221 (Hovenkamp) and Bathelaan et al WO 94/24169 (Bathelaan).

Claim 28 is drawn to a method for thickening a starch solution comprising adding a hydrophobized amylopectin starch product obtained from a process comprising

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attaching a hydrophobic substituent to the starch by esterification, etherification, or amidation wherein the starch is a root or tuber starch, or derivative thereof wherein said starch is from a plant that has been genetically modified to have reduced amylose content, comprising at least 95% amylopectin based on the dry substance of the starch and wherein the reaction utilizes a hydrophobic reagent comprising an alkyl having 7-24 carbon atoms to a starch solution.

Seppala teaches hydrophobic starches which may be derived from potato, wheat, maize, tapioca, rice and similar root or cereal plants (page 15, lines 18-26). The amylopectin content of the starch may be from 0 to 100% (page 15, lines 18-20). The starch is prepared by oxidation, hydrolysis, cross-linking, cationization, etherification, or esterification. The starches are preferably obtained from the esterification or etherification of the natural starch with one or several C2-24-carboxylic acids (page 15, lines 28-31; page 16, lines 1-4). Esterification is also accomplished using acetic anhydride in the presence of a catalyst (page 16, lines 15-22).

Seppala and the instantly claimed invention differ in that Seppala does not teach starches from a plant that has been genetically modified. However, these deficiencies are taught by Hovenkamp and Bathelaan.

Hovenkamp teaches the isolation of amylose-free starch from mutant potatoes [genetically modified] (page 220, first paragraph). The methodological steps claimed by applicant for preparing a hydrophobic starch are known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the starch taught by Hovenkamp in the process taught by Seppala. A prima facie case of

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obviousness may be made when chemical compounds [starches] have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). In the instant case, the starches taught by both Seppala and Hovenkamp have up to 100% amylopectin content.

Bathelaan teaches a method of making amid-modified carboxyl-containing polysaccharides via amidation utilizing long chain primary alkyl amines (pages 12-14, Examples 1-3). Bathelaan further teaches that the hydrophobic polysaccharides exhibit an improved viscosifying [thickening] effect (page 2, lines 15-20) and may be used as a compatibilizer for starch based polymers (page 11, lines 7-11). It would have been obvious to use the hydrophobic starches as thickening agents since Bathelaan teaches that hydrophobic polysaccharides improve viscosity.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Seppala, Hovenkamp, and Bathelaan and arrive at the instantly claimed invention. One would have been motivated to do so to produce dispersing agents useful for the coatings industry.

Conclusion

14. Claims 21-28 are pending. Claims 21-28 are rejected. No claims are allowed.

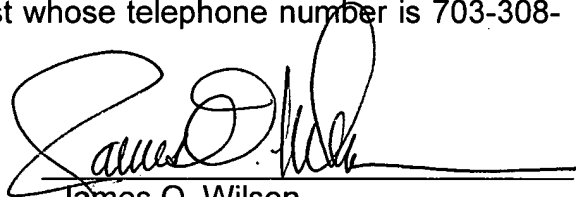
Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick T. Lewis whose telephone number is 703-305-4043. The examiner can normally be reached on M-F 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 703-308-4624. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Patrick T. Lewis, PhD
Examiner
Art Unit 1623



James O. Wilson
Supervisory Patent Examiner
Technology Center 1600

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January 7, 2003